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EXAMINER
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CHIU, TSZ K

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



## **DETAILED ACTION**

### ***Claim Objections***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "...single dimensional nano-structures..." must be shown or the feature(s) canceled from the claim(s). In figure 5 of the applicant's invention shown a width and length in figure 6 shown the height of the invention therefore the claimed structure is not in a single dimensional nano-structure. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Yu et al. (20020088970).

With respect to claim 1, Yu discloses nano-objects (312), particularly atomic threads, single dimensional nano-structures and quantum dots, this set being characterised in that the nano-objects are made essentially of a metal and are formed on the surface of a substrate (302) made of a monocrystalline semiconducting material.

With respect to claim 2, Yu discloses the monocrystalline semiconducting material is chosen from among monocrystalline silicon carbide, monocrystalline diamond, covalent monocrystalline semiconductors, and composite monocrystalline semiconductors (paragraph 87, lines 1-5).

With respect to claim 3, Yu discloses substrate is a monocrystalline substrate of silicon carbide in the cubic phase (paragraph 71, lines 5-10).

With respect to claim 4, Yu discloses the surface (2) is a cubic silicon carbide surface, rich in .beta.-SiC (100) 3.times.2 silicon (paragraph 71, lines 5-10).

With respect to claim 5, Yu discloses the nano-objects are three-dimensional clusters (4) of the metal on the surface (Fig. 21).

With respect to claim 6, Yu discloses the clusters are distributed in an orderly manner (fig 21, the nano object spaced in orderly manner) on the surface and thus form a lattice of metal dots.

With respect to claim 7, Yu discloses the surface is a cubic silicon carbide surface (paragraph 71, lines 5-10) which is Si terminated,  $\beta$ -SiC(100) c(4.times.2), and the nano-objects are parallel atomic threads or parallel single-dimensional nanometric strips of the metal (308, For example Fig. 21).

With respect to claim 8, Yu discloses the surface comprises parallel atomic threads of Si (308, For example Fig. 21), the atomic threads and single dimensional strips of the metal being perpendicular to these atomic threads of Si.

With respect to claim 9, Yu discloses passivated areas (fig. 21, area between 312) and non-passivated areas (fig. 21, area where reference number 312) and the nano-objects are formed on these non-passivated areas of the surface.

### ***Allowable Subject Matter***

Claims 10-11 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The cited art Yu fail to teach a metals for which the d band is full, jellium type metals, alkaline metals and transition metals which the metal is chosen from among sodium and potassium.

### ***Response to Arguments***

Applicant's arguments filed 3/11/08 have been fully considered but they are not persuasive. Applicant argue that reference Yu fail to disclose nano-objects are made essentially of metal however, Yu disclose that the nano-object comprising of metal such as copper, titanium, and strontium titanium (transition metals). Therefore the rejection on claims 1-9 are proper.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tsz K. Chiu whose telephone number is 571-272-8656. The examiner can normally be reached on 0800 to 1700.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra V. Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

/Kiesha L. Rose/

Primary Examiner, Art Unit 2822